

DOCUMENT RESUME

ED 118 441

SE 020 295

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TITLE Products Liability - Engineering and the Law.
PUB DATE Jun 75
NOTE 14p.; Paper presented at the Annual Meeting of the American Society for Engineering Education (Colorado State University, Ft. Collins, Colorado, June 16-19, 1975)

EDRS PRICE MF-\$0.83 HC-\$1.67 Plus Postage.
DESCRIPTORS Engineering; *Engineering Education; Higher Education; *Instructional Materials; *Legal Responsibility; Legislation; Manufacturing; *Manufacturing Industry; Professional Continuing Education

IDENTIFIERS *Products Liability Laws

ABSTRACT

The fundamentals of products liability law are provided to aid the engineer and engineering student in the design and manufacture of products that are not only safe but also in harmony with the demands of the law. (MLH)

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PRODUCTS LIABILITY - ENGINEERING AND THE LAW

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The area of case law known as *products liability* has undergone dramatic changes during the last several years. These changes have tended to make anyone connected with the sale of a product more liable for injuries occurring during the use of that product. As a consequence, the number of products liability lawsuits has increased from one-hundred thousand in 1966 to more than half a million in 1971, and is expected to exceed one million by 1980.¹ At the same time consumer-conscious juries are presently returning verdicts for the plaintiff 54 percent of the time compared to 43 percent in 1965 with the average award rising from \$11,644 in 1965 to \$79,940 in 1973.² In California alone there is an average of ten \$100,000 verdicts each week!³

Considering these facts, it is not surprising that within the last fifteen years the profit margins of insurance companies underwriting liability insurance has changed drastically from 15 percent per year to a loss of 18.6 percent.⁴ Efforts to counteract this trend have resulted in higher deductibles, higher premiums (assuming a company is eligible for products insurance in the first place), changes in indemnification rules, and policies that exclude coverage for such eventualities as design defects. All of these changes have placed the major responsibility for the reduction and minimization of products liability exposure directly on the manufacturer. For any manufacturer who relies too heavily on products liability insurance for protection from products liability lawsuits reflects the attitude of the woman who refused to let her son swim in the ocean because of the large drop-offs, dangerous undertows, and the presence of sharks. The son, upon hearing her argument, responded, "but Mom, Dad is out there swimming!" "Yes, Son," the Mother said, "but Dad has insurance."

The principal means of reducing products liability exposure is implementation of an effective products liability loss control and product safety

program. At the heart of this program is an active products liability and safety committee made up of representatives of the legal, insurance, marketing, advertising, engineering, manufacturing, quality control, purchasing, and materials areas, to name just a few. This committee, to be effective, must filter down from the corporate level to the divisional levels right down to the worker in the laboratory, plant, and field.

The glue that binds these diverse interest areas is products liability law. No products liability loss control and product safety program can be effective unless the principal members of the program have a good understanding of what the law is asking of engineers. In addition, these same personnel must keep abreast of the continual changes in the law resulting from new decisions which may drastically alter product design, standards, warnings, advertisements, or the writing of operators manuals.

This paper illustrates the application of products liability law to a company's products liability loss control program and makes a strong plea that similar concepts be taught to our undergraduate engineers before they are exposed to them the hard way.

A Few Definitions

*Products liability is the name currently given to the area of case law involving the liability of sellers of chattels to third persons with whom they are not in privity of contract. It is generally a matter of negligence or strict liability.*⁵ The term *chattels* is more comprehensive than *goods* because it includes animate as well as inanimate property.⁶

Privity of contract is the connection or relationship which exists between two or more contracting parties.⁷ The concept of privity is important because in the early history of products liability law, the requirement of privity made it difficult for a plaintiff to sue for injuries resulting from the normal use of a defective product. The courts at that time (*Winterbottom v. Wright*, 1842) established the requirement that there be

a direct contract between the user of the product and the manufacturer, and lack of privity generally barred recovery. Today privity is no longer required in the majority of states in negligence actions. As a result, the seller can broadly be interpreted as being the defendant who may be the manufacturer, distributor, packer, advertiser, wholesaler, retailer, or practically anyone connected with the sale of the defective product.

Negligence in General

According to Prosser, "the rule that has finally emerged regarding negligence actions is that the seller is liable for negligence in the manufacture or sale of any product which may reasonably be expected to be capable of inflicting substantial harm if it is defective."⁸ In other words, *negligence is the omission to do something which a reasonable man, guided by those ordinary considerations which ordinarily regulate human affairs, would do or the doing of something which a reasonable and prudent man would not do.*⁹ The prevailing interpretation of *defective* is that the product does not meet the reasonable expectations of the ordinary consumer as to its safety.

One of the primary considerations of a products liability committee will be to consider the term *reasonable* in the light of the experience regarding the use and misuse of the product in the field. For example, consideration should be given to just what a *reasonably* safe design is in terms of defectiveness, what a *reasonable* inspection or testing program is, and what a *reasonable* warning or instruction is. Despite the apparent lack of objectivity of this goal, it must be done, and can best be done by the manufacturer. One reason products liability litigation has increased is that manufacturers have not kept pace with the courts' interpretation of *reasonable*. The following examples best illustrate this.

Design Negligence

There are two particular areas in which the liability of the manufacturer, even though it may occasionally be called strict (as will be discussed later), appears to rest upon a departure from proper standards so that it is essentially a matter of negligence.¹⁰ One of these is design.. Design negligence cases are generally predicated on one of three theories:

- (1) that a concealed danger has been created by the manufacturer's design;
- (2) that the manufacturer has failed to supply needed safety devices in designing the product;
- (3) that the design called for materials of inadequate strength or failed to comply with accepted standards to make the product fit for the purpose for which it was intended.¹¹

To illustrate the trend of products liability law involving negligence in design, let's look at the case of *Lindroth v. Walgreen Company*, a 1950 Illinois case involving a vaporizer which overheated after the water had boiled away. It was alleged that the defendant negligently failed to incorporate in the vaporizer a safety cutoff switch which would have automatically stopped the flow of current, preventing the vaporizer from overheating and causing the fire. The judgement was found against both the manufacturer and distributor for \$65,000 based primarily on the fact that failure to include the automatic cutoff switch constituted negligence in design, making the vaporizer an inherently dangerous product.

Applying the rule of negligence and the definition of the term *defective* to this case, one can understand why the courts found for the plaintiff — despite the fact that there was a misuse of the product in that the plaintiff failed to fill the vaporizer according to the manufacturer's

instructions. It is unreasonable, the courts said, to expect a consumer to properly use a vaporizer constantly without at some time or other being faced with a situation in which he or she might fail to refill the vaporizer with water. A conscientious consumer, for example, who might use the product over a period of ten years or more and one day either oversleeps, talks on the telephone too long, is faced with an emergency situation, or any one of a number of instances in which failure to fill the vaporizer is understandable, can hardly be accused of negligence or misuse of the product.

Another example illustrating the way in which a product can be shown to be *defective* is illustrated by another vaporizer. In the case of *McCormick v. Hanksraft*, a 1967 Minnesota case, a three-year-old child suffered third-degree burns after knocking the vaporizer over causing the water to spill on a large portion of his body. The defect in design was alleged to be a loose-fitting cap. Testimony by the plaintiff's expert revealed that if small holes were made in the cap to prevent the dangerous build-up of steam, the cap could have been attached permanently by threads, thus minimizing the danger of burns from a reasonably foreseeable accident — the tipping over of a vaporizer by a child. One principle to be learned here is that today's manufacturer is expected to design a product to protect the occasionally careless user from injuries due to the foreseeable misuse of a product. This trend is becoming increasingly apparent in states and courts across the country, especially in such liberal states as California. Note that the courts are not asking for the safest product, just a reasonably safe one.

One of the more controversial issues involving negligence in design is in regard to injuries sustained by occupants during an automobile crash. In what has been termed *second-collision injuries*, the concern is whether or not the automobile manufacturer is responsible for making a car *crash-worthy*, that is, of such design that minimal injuries result in the event

of an accident. Automobiles with gasoline tanks placed too close to the occupants, protruding ashtrays and knobs, convertible tops, and noncollapsible steering wheels are examples of designs that have aggravated injuries in foreseeable accidents.

As an example, in *Turner v. General Motors*, a 1974 Texas case, the plaintiff was driving his 1969 Chevrolet Impala hardtop on a two-lane road when a truck he was following pulled over to the right shoulder. Assuming the truck was either stopping or turning right, Mr. Turner attempted to pass the truck when it suddenly made a left-hand turn causing Mr. Turner to pull sharply to the right causing him to overturn. As a result, the right front portion of the roof collapsed resulting in paralysis of Mr. Turner's hands and legs. The estimated speed before the rollover was 20-30 miles per hour.

In this case, the manufacturer of the auto was held liable for the injuries sustained by Mr. Turner due to the collapse of the roof. The defect was the inability of the roof to resist stresses due to a rollover at the speed of the car prior to overturning. The court held that the manufacturer was liable for a defect in design which produced injury but did not cause the accident.

Since automobiles seem to be the product involved in landmark decisions (viz., *MacPherson v. Buick Motor Co.*, 1916; and *Henningson v. Bloomfield Motors, Inc.*, 1960), manufacturers should give serious consideration to second-collision type injuries of their own products.

Negligence Due To Inadequate Wording

According to Prosser, "the second area in which negligence appears to predominate is that of warning of dangers involved in the use of the product, and where called for, directions for its use."¹²

The seller has a duty to warn of the dangers involved in the use of his product. He is not required to warn of obvious dangers such as guns kill, knives cut, forks puncture, and cooking stoves may cause fires. However, the requirement that the seller need only warn of reasonably foreseeable dangers has been so liberally interpreted in recent years that what may have been obvious or unforeseeable dangers in the past may be interpreted differently today. This emphasizes the need for manufacturers to keep abreast of the changes in products liability law. Labels and other literature may also be required to prevent injuries to the immediate buyer and to third persons who might foreseeably use the product. Some physical evidence of the response by manufacturers regarding their duty to warn is provided by the increased use of warnings on such products as automobile batteries (keep open flames or lighted cigarettes away from charging battery), hammers (do not strike against another hammer or hard object), and chisels (wear safety glasses during use).

The presence of some warnings may seem to be of doubtful value to the manufacturer. However, unless he can prove they are either costly, inconvenient, or not necessary (e.g., through research studies), failure to consider their use can be expensive as a recent Wisconsin case illustrates. In October 1973 a Brown County Wisconsin circuit court jury awarded damages of more than \$643,000 to the plaintiff, Saviour Canadeo, operator of Canadeo Exterminating Company, from the defendant, Dow Chemical Company. Canadeo was exposed to methyl bromide gas while he was fumigating a boxcar in 1969. As a result of this exposure, he suffered brain damage and is now confined to a wheelchair. The finding for the plaintiff resulted from the fact that Dow Chemical did not provide proper warnings explaining that a gas mask might not provide absolute protection when using a certain fumigant. A breakdown of the award showed that \$200,000 was awarded for past and future pain and suffering, \$150,000 for impairment of future earning capacity, \$115,000 for

future medical expenses, \$49,489 for past medical expenses, and \$28,750 for past wage losses. The jury also awarded Canadeo's wife \$100,000 for loss of services and companionship.

A 1975 case, *Rogers v. Toro Manufacturing Company*, again illustrates the need to continually monitor products liability decisions in order to insure compliance with the law. In this instance, a traction control lever on a lawn mower shifted from the disengage to the engage position while the mower was left unattended, striking the plaintiff in the right foot causing serious injuries. The court, concurring with a previous decision, reiterated the statement that *to have any effect, instructions and warnings must warn of the dangers inherent in the failure to follow the instruction or warning.* Failure on the part of Toro to instruct or warn the user that if the mower was left unattended the traction control lever might move from the engage to the disengage position and be propelled forward under its own power was, according to the court, failure to adequately instruct and warn.

Strict Liability

Another reason for concern over the state of products liability litigation has been the adoption of a new theory of recovery called strict liability. This theory was first adopted by California in 1963 in the case of *Greenman v. Yuba Power Products*. It has now been adopted by forty states. This theory differs from negligence in the following way. While negligence centers around the sellers standard of care or fault, the concept of strict liability is essentially liability without fault. A case is one of *strict liability when neither care nor negligence, neither good nor bad faith, neither knowledge nor ignorance will save the defendant.*¹³ Under strict liability, the plaintiff need only prove that:

- (1) the product contained a defect and was unreasonably dangerous;

(2) the defect was under the control of the manufacturer or that it existed at the time the product left the defendant's hands; and

(3) the defect was the cause of the injuries.

This concept can be illustrated by looking at a few examples. In a negligence case involving a manufacturing defect, it would be important for a company to show that its quality control program is as good as or better than quality control programs of competitors producing similar products. This type of evidence may disprove the negligence of the company.

Under strict liability, the negligence of the manufacturer or his fault is of little concern and evidence indicating the company's exemplary quality control program will not contribute to the defense, if in fact it is allowed to be introduced in the first place. For example, according to Adlard,¹⁴ only three cans of commercially canned food have caused four deaths due to botulism poisoning in the United States since 1925. During this same time period, Americans used over 775 billion cans of commercially produced food. Despite this extraordinary quality control record, under strict liability, a plaintiff can still recover for injuries attributed to any one of these three defective cans. This is true even despite the fact that during this same time period, seven hundred Americans died of botulism poisoning due to home-canned foods.

Everything that was said with regard to negligence theory is true under strict liability except that under this theory the presence of a defect in the product (design, materials, warnings, etc.), the fact that the defect was under the control of the manufacturer, and the fact that the defect was related to the plaintiff's injury is often enough to find for the plaintiff.

Strict liability in tort is described by the American Law Institute as follows:¹⁵

402A. SPECIAL LIABILITY OF SELLER OF PRODUCT FOR PHYSICAL HARM TO USER OR CONSUMER

(1) ONE WHO SELLS ANY PRODUCT IN A DEFECTIVE CONDITION UNREASONABLY DANGEROUS TO THE USER OR CONSUMER OR TO HIS PROPERTY IS SUBJECT TO LIABILITY FOR PHYSICAL HARM THEREBY CAUSED TO THE ULTIMATE USER OR CONSUMER, OR TO HIS PROPERTY, IF (a) THE SELLER IS ENGAGED IN THE BUSINESS OF SELLING SUCH A PRODUCT, AND (b) IT IS EXPECTED TO AND DOES REACH THE USER OR CONSUMER WITHOUT SUBSTANTIAL CHANGE IN THE CONDITION IN WHICH IT IS SOLD.

(2) THE RULE STATED IN SUBSECTION (1) APPLIES ALTHOUGH, (a) THE SELLER HAS EXERCISED ALL POSSIBLE CARE IN THE PREPARATION AND SALE OF HIS PRODUCT, AND (b) THE USER OR CONSUMER HAS NOT BOUGHT THE PRODUCT FROM OR ENTERED INTO ANY CONTRACTUAL RELATION WITH THE SELLER.

The fact that proof of negligence is not essential to impose liability is a frightening prospect for most manufacturers, particularly those involved in the production of a large number of products, especially consumer products.

The significance of this doctrine, as far as engineers are concerned, is that although in many cases it is impossible to test every product, the engineer must weigh the chances of a defect causing serious injury against the cost of eliminating or minimizing defects in the product.

Summary

A knowledge of products liability law is as fundamental to a manufacturer's products liability loss control program as design reviews, up-to-date quality

control techniques, product conformance to federal, state, and trade standards and other aspects of the program. Providing engineering students with an understanding of products liability law will enable them to better guide the manufacturer into designing and manufacturing a product which is not only reasonably safe but in harmony with the demands of the law.

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